

What is claimed:

1. A MEM apparatus comprising:
a substrate;
5 a first structure supported on said substrate;
an electrostatic component disposed between said substrate and said first structure and extending across an area of said substrate; and
at least one support structure disposed within said area of said substrate for supporting said first structure.
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2. A MEM apparatus as set forth in Claim 1, wherein said electrostatic component comprises a movable electrode.
3. A MEM apparatus as set forth in Claim 1, wherein said electrostatic
15 component comprises a static electrode.
4. A MEM apparatus as set forth in Claim 1; wherein said electrostatic component includes a movable electrode and a static electrode.
- 20 5. A MEM apparatus as set forth in Claim 4, wherein said support structure is positioned proximate to said static electrode.
6. A MEM apparatus as set forth in Claim 1, wherein said support structure has a height, relative to an axis extending between said first structure and said
25 substrate, greater than a height of said electrostatic component, wherein said support structure maintains a separation between said first structure and said electrostatic component.

7. A MEM apparatus as set forth in Claim 1, wherein said at least one support structure comprises multiple support structures distributed across an area of said first structure.

5 8. A MEM apparatus as set forth in Claim 1, wherein said support structure is substantially electrically isolated from said electrostatic component.

9. An MEM apparatus as set forth in Claim 1, wherein said electrostatic element comprises a movable element that is movable across a range of positions
10 and said support structure is positioned to avoid mechanical interference with said movable element as said movable element moves across said range of positions.

10. A MEM apparatus comprising:
a substrate;
15 a first structure supported on said substrate;
a movable component disposed between said substrate and said first structure and extending across an area of said substrate; and
at least one support structure disposed within said area of said substrate for supporting said first structure.

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11. A MEM apparatus as set forth in Claim 10, wherein said movable component includes a movable electrode and a static electrode and said support structure is positioned proximate to said static electrode.

25 12. A MEM apparatus as set forth in Claim 10, wherein said support structure has a height, relative to an axis extending between said first structure and said substrate, greater than a height of said movable component, wherein said support structure maintains a separation between said first structure and said movable component.

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13. A MEM apparatus as set forth in Claim 10, wherein said at least one support structure comprises multiple support structures distributed across an area of said first structure.

5 14. A MEM apparatus as set forth in Claim 10, wherein said support structure is substantially electrically isolated from said movable component.

15. An MEM apparatus as set forth in Claim 10, wherein said movable component is movable across a range of positions and said support structure is
10 positioned to avoid mechanical interference with said movable component as said movable component moves across said range of positions.

16. A MEM apparatus, comprising:

a movable optical component;

15 an actuator mechanism for effecting movement of said optical component;

a cover extending over at least a portion of said actuator mechanism, said cover further extending across an area; and

at least one support structure, disposed within said area, for supporting said cover.

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17. A MEM apparatus as set forth in Claim 16 wherein said actuator mechanism comprises a movable electrode and a static electrode and said support structure is positioned proximate to said static electrode.

25 18. A MEM apparatus as set forth in Claim 16, wherein said support structure has a height, relative to an axis extending between said cover and a bottom surface of said actuator mechanism, greater than a height of said actuator mechanism, wherein said support structure maintains a separation between said cover and said actuator mechanism.

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19. A MEM apparatus as set forth in Claim 16, wherein said at least one support structure comprises multiple support structures distributed across an area of said cover.

5 20. A MEM apparatus as set forth in Claim 16, wherein said support structure is substantially electrically isolated from said actuator mechanism.

21. An MEM apparatus as set forth in Claim 16, wherein said actuator mechanism comprises a movable component that is movable across a range of
10 positions and said support structure is positioned to avoid mechanical interference with said movable component as said movable component moves across said range of positions.

22. A MEM apparatus, comprising:
15 a substrate; and
a micromachined structure formed on said substrate including:
an electrical lead supported on said substrate; and
filter structure, supported on said substrate, for filtering an undesired
electrical component from said lead.

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23. An apparatus as set forth in Claim 22, wherein said filter comprises structure for establishing a capacitance between said structure and said electrical lead.

25 24. A method for use in constructing a MEM device, comprising the steps of:
first establishing an active component on a substrate, said active component comprising one of movable component and an electrostatic component, said active component extending across an area of said substrate;
second establishing an overlying structure extending over at least a portion
30 of said active component; and

third establishing at least one support structure within said area for supporting said overlying structure.

25. A method as set forth in Claim 24, wherein said active component
5 comprises a movable electrode and a static electrode and said step of third establishing comprises positioning said support structure proximate to said static electrode.

26. A MEM apparatus as set forth in Claim 24, wherein said step of third
10 establishing comprises forming said support structure such that said support structure has a height, relative to an axis extending between said overlying structure and said substrate, greater than a height of said active component, wherein said support structure maintains a separation between said overlying structure and said active component.

15 27. A method as set forth in Claim 24, wherein said step of third establishing comprises forming multiple support structures distributed across an area of said overlying structure.

20 28. A method as set forth in Claim 24, wherein said step of third establishing comprises substantially electrically isolating said support structure from said active component.

25 29. A method as set forth in Claim 24, wherein said active component comprises a movable component that is movable across a range of positions and said step of third establishing comprises positioning said support structure to avoid mechanical interference with said movable component as said movable component moves across said range of positions.